

# In-Picture Image Personalization in Production Digital Color Printing

Steven De Schamphelaere  
 Realm()  
 Kessel, Belgium

## Introduction

In-picture image personalization refers to the photorealistic implementation of personalized elements within an image in a digital print workflow. Examples include: personalized driving instructions and maps on a printed invitation, personalized graffiti on a wall in a picture on the cover of a brochure, the name of the addressee embroidered on a bath towel in a picture of a travel brochure, etc.(see also figure 1 below for an example).

The economic value of having in-picture personalization lies in the increased attention the printed material will receive, which leads to higher response rates and customer action. Having the correct personalization within an embedded image, further amplifies the emotional link between the addressee and the mailer(or the presented personalized picture).

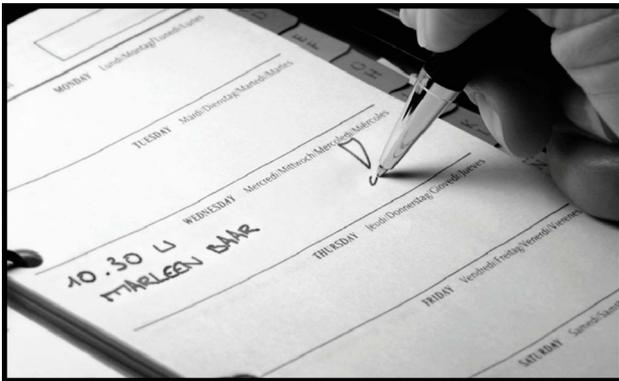


Figure 1. Example of in-picture personalization: the name of the addressee of a mailing is 'handwritten' in the image. (PictureTalk® image)

## Dynamics of Personalization

Depending on where and how personalization is applied to a printed document, 4 categories in customization can be identified:

- **Dynamic text.** This is the most common realm of personalization where text elements or complete blocks become database driven.
- **Dynamic pages.** Complete pages or page elements are selected based on database criteria. This category includes 'page picking', but also custom selection of images or objects in a page.

- **Dynamic objects.** Using a parameter driven object description, color, position and geometry of objects in a printed document are adapted to the contents of the driving database in the publishing workflow, e.g. diagrams and graphs in transactional printing. AFP and Postscript are common page and object description languages, but the more recent introduction of standards such as PDF, SVG and XML allows for a much more transparent, creative and efficient workflow.
- **Dynamic images.** An ultimate level of personalization is achieved by in-picture customization where, based on data in a related database, photographic images are being modified to contain personalized elements (as opposed to dynamic objects where artificial objects are customized).

This level of personalization has only recently grown to maturity based on various developments in:

- core processing power of digital prepress and front-ends;
- increasing synergy between solutions for static print, computer animation and video editing, and
- establishment of cross-discipline industry standards.

## The Process

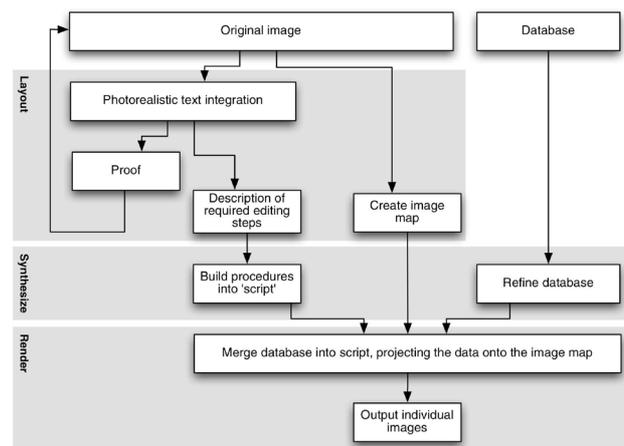


Figure 2. Process steps in a typical in-picture image personalization process.

The process of in-picture image personalization requires relatively high levels of expertise in 3 different areas: creative, database and programming. This makes the whole rather complex and difficult to integrate into a single application or production environment. Three stages in the creation of dynamic images can be identified as illustrated in figure 2.

### Layout

Starting with an original image, dummy text is integrated into the image, using any of the standard image editing tools available (Adobe Photoshop, GIMP,...). In this layout process the dummy text information is being kept as a separate object or layer, while striving for the highest possible level of realism and integration. Aspects defining the quality of the final image include:

- color matching;
- sharpness, graininess and depth of focus;
- perspective;
- surface, curves and distortions.

In most cases, such as with the emulation of handwritten text, unique individual characters and the use of custom developed glyphs are required to avoid repetition.

The result of this creative process is a sequence and description of the image editing actions that have been iterated in order to arrive to the approved, manually personalized, image.

### Synthesize

The description (or prescription) of the required editing steps is then translated into a programmed sequence of actions using the related database content as input. This sequence drives various image manipulation tools and application. The UNIX community (and as such also the MacOS X platform) offers a wide variety of highly efficient tools to perform image manipulations, e.g. resizing (SIPS), 3-D or surface maps. When placed in an intelligent sequence, two or more of these tools can achieve highly complex effects, without compromising processing performance.

### Render

In the final stage of the process, the images are being generated through the defined sequence, merging the data into the picture.

The speed of the rendering process depends on the number of required iterations, the size and complexity of the image and text elements, and more importantly, the processing power of the digital platform(s) being used.

## Requirements

The rendering process is extremely demanding in terms of processing power, data bandwidth and storage. For example: a mailing with 50,000 compressed images (10 by 15 cm) outputs 115 GB (or 165 CD's) of data and may take up to 20 hours to process on even the fastest available common processing platform.

Throughout the different process steps, progress needs to be monitored, logged and verified.

In addition to the requirements for generating the images, in-picture image personalization can be even more demanding on the digital front end driving the output device.

## Benefits: A Case Study

A Belgium based IT-services company required an additional 30 high-profile engineers urgently. A conventional mailing campaign, set-up together with a leading provider of online recruitment services returned a response rate of only about 3%. In addition, the profile of the candidates that did respond seemed not dynamic enough: "these people were waiting for this mailing...". Their local digital print provider suggested an in-picture image personalization solution, which would enable them to develop an alternative mailing campaign. The result was a postcard mailer with on the front an image of an office desk with a filled coffee cup that carried the logo of the IT company and the name of the addressee, suggesting that the image was a picture taken from his or her office desk with his or her coffee cup. A detail of the coffee cup image is represented in figure 3.

The response rate for this second mailing was 12%. Even more important, it reached people with a much better profile. From a cost perspective, the second mailing was 'only' 20% more expensive than the conventional one.



Figure 3. Detail of postcard image containing personalized desktop and coffee cup. (PictureTalk® image)

## Conclusion

Although in-picture personalization is complex, and requires tight integration of creative and programming skills, several new initiatives prove that it is possible.

Since consumers are being overly exposed to increasing numbers of 'intelligent' mailers nowadays, new captivating techniques need to be sought and applied. In-picture personalization offers one of the most compelling solutions, as is demonstrated by the first convincing cases.

## References

1. Elliotte Rusty Harold and W. Scott Means, XML in a nutshell, O'Reilly, 2001, pg. 480.

2. Ethan Wilde, Adobe Illustrator Scripting, Adobe Press/ Peachpit Press, 2003, pg. 502.
3. Adobe Photoshop cs -Classroom in a Book, Adobe Press/ Peachpit Press, 2004, pg.690.
4. Adobe Illustrator cs -Classroom in a Book, Adobe Press/ Peachpit Press, 2004, pg.564.
5. [www.w3.org/xml](http://www.w3.org/xml) and [www.w3.org/graphics/svg](http://www.w3.org/graphics/svg)
6. [www.podi.org](http://www.podi.org)
7. [www.gimp.org](http://www.gimp.org)

## **Biography**

**Steven De Schamphelaere** is founder and managing director of Realm(), supporting digital print organisations and users in bringing innovating and challenging digital print applications to the market, including the PictureTalk services which provide high-volume in-picture personalization. He received his Masters degree in Commercial Engineering from the University of Antwerp, Belgium, in 1992.

Mr. De Schamphelaere previously was involved in the start-up of several now leading digital print centers, and served as Product Manager and Manager Strategic Planning at Xeikon N.V.